

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method of preparing a file that defines one or more objects to be created photolithographically for correction with an optical and process control (OPC) tool, comprising:

receiving the file that defines the one or more objects to be created, each object being defined as a polygon in the file;

fragmenting each polygon into a number of edge segments that extend around the perimeter of the polygon;

defining a control site for at least some of the edge segments;

applying a smoothing filter to one or more of the fragmented polygons, the smoothing filter simulating how objects would be created on a wafer from the one or more fragmented polygons;

calculating an error for the control sites in the one or more fragmented polygons; and

using the calculated errors to adjust the position and/or orientation of the control sites or to eliminate control sites from a polygon prior to applying the OPC tool to the polygons.

2. The method of Claim 1, wherein the smoothing filter is a two-dimensional low pass filter.

3. The method of Claim 1, wherein the smoothing filter is applied by convolving the one or more fragmented polygons with a Gaussian filter.

4. The method of Claim 3, wherein the error for each control site is calculated by determining a distance between the control site and a predefined contour of the convolution.

5. The method of Claim 4, wherein a control site is eliminated from a fragmented polygon if the distance exceeds a threshold.

6. The method of Claim 4, wherein a control site is moved if the distance is less than a threshold.

7. The method of Claim 3, wherein the error for each control site is calculated by determining a gradient of the convolution contour near the control site and comparing the orientation of the gradient with the orientation of the control site.

8. The method of Claim 7, further comprising adjusting the orientation of a control site to be aligned with the gradient of the convolution result near the control site.

9. The method of Claim 7, wherein a control site is eliminated if the angle between the control site and the gradient is greater than a threshold.

10. The method of Claim 9, wherein the angle of the control site is measured with respect to a direction that is normal to a control site's corresponding edge segment.

11. A method of preparing a file that defines objects to be created with a photolithographic process for the application of an optical and process control (OPC) tool, comprising:

receiving a file that defines the objects to be created, each object being defined in the file as a polygon;

fragmenting each polygon into a number of edge segments that extend around the perimeter of the polygon;

defining a control point for at least some of the edge segments that defines where an edge placement error for the edge segment should be minimal;

identifying control points in the polygons where it is likely to be difficult to obtain a minimum edge position error; and

moving or removing the identified control points from the polygons prior to the application of an OPC tool on the fragmented polygons.

12. The method of Claim 11, wherein the control points are identified by applying a smoothing filter to the fragmented polygons.

13. The method of Claim 12, wherein the smoothing function is applied by convolving the fragmented polygons with a Gaussian filter.

14. The method of Claim 11, wherein the control sites are identified by determining a distance between a control site and a predefined contour of a convolution of the fragmented polygons and a Gaussian filter.

15. The method of Claim 11, wherein the control sites are identified by determining an angle between the control site and a gradient of the contour of a convolution of the fragmented polygons and a Gaussian filter.

16. A computer readable medium including a number of program instructions that are executable by one or more processors to perform any of the method Claims 1-15.

17. A file that defines a number of features to be created by a lithographic process that has been processed according to any of the method Claims 1-15.